



UNITED STATES PATENT AND TRADEMARK OFFICE

W-1
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,420	11/19/2003	Kyoung-Ju Lee	P-0567	5338
34610	7590	02/10/2005	EXAMINER	
FLESHNER & KIM, LLP P.O. BOX 221200 CHANTILLY, VA 20153			CASCHERA, ANTONIO A	
		ART UNIT		PAPER NUMBER
		2676		

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/715,420	LEE, KYOUNG-JU
	Examiner Antonio A Caschera	Art Unit 2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-40 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 19 November 2003 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>11/19/03</u>	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in the pending application.

Specification

2. The disclosure is objected to because of the following informalities:
 - a. Reference #650, referring to the "video memory," found on page 9, paragraph 33, lines 3-4 of the specification, should be replaced with #350 to comply with the "video memory" of Figure 3.

Appropriate correction is required.

Claim Objections

3. Claims 24, 29 and 36 are objected to because of the following informalities:
 - a. The phrase, "...wherein the first number is bits is greater than..." (see line 1 of each claim), should be corrected to read, "...wherein the first number of bits is greater than..."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yi (U.S. Patent 6,778,187 B1) in view of Kondo (U.S. Patent 6,556,209 B2).

In reference to claims 1, 13, 20-22, 25, 27, 30-32, 34 and 37-39, Yi discloses a method and device for processing 24-bit digital video or graphics data by reducing color component bit length and storing the reduced color component bits by concatenating them within a 16 bit memory space (see column 2, lines 51-59). Yi discloses that the bit reducing method may reduce an 8 bit red color component to 5 bits, an 8 bit green color component to 5 bits and an 8 bit blue color component to 4 bits allocating the 2 remaining bits to represent a special attribute (see columns 2-3, lines 63-1). Yi discloses receiving source RGB color data in the form of 24 bit color data and determines a source depth per color component which represents the number of bits per color components, defined as 8 bits per RGB color components by Yi (see column 5, lines 28-36). Not, the office interprets Yi to inherently disclose a, "divider" to divide the 24 bit source data into 8 bit RGB color data as Yi discloses determining a source depth per color component which represents the number of bits per color components and a video graphics processor for performing real-time processing of graphics and/or video data (see column 4, lines 48-50). Yi also discloses shifting each color component by a predetermined value, combining these shifted values to form one 16 bit length color data and storing the 16 bit length color data in memory (see column 5, lines 57-60, column 6, lines 15-39 and #S27 and S28 of Figure 2).

Note, the office interprets Yi to inherently disclose a, "combiner" as shifted values are combined to form one 16 bit length color data while Yi also discloses a video graphics processor for performing real-time processing of graphics and/or video data (see column 4, lines 48-50). Yi does not explicitly disclose comparing the RGB color components to see which one has a comparatively greater specific gravity however Kondo does. Kondo discloses a memory apparatus of a digital video signal processing circuit implementing color compressing processing of digital video data (see column 2, lines 35-37 and column 4, lines 65-67). Kondo discloses receiving three primary RGB color data comprised of 24 bits in length, obtaining 8 bits per RGB component and compressing this data (see column 5, lines 9-16). Kondo further discloses calculating the absolute value of the difference of primary color data of adjacent pixels and comparing these results to obtain the maximum value of R, G, B (see column 5, lines 16-43). Dependent upon which value, R, G, B is determined to be the maximum color value, data compression is varied by the number of bits each color component is compressed to (see column 5, lines 44-46). Further, Kondo discloses that when a maximum of R is determined, 8 bit red input data is compressed to 6 bit red data, while when a maximum of G is determined, 8 bit green input data is compressed to 7 bit green data and when a maximum of B is determined, 8 bit blue input data is compressed to 6 bit blue data (see columns 5-6, lines 50-3 and Figure 2). Note, the office interprets such determining of a maximum color component value of Kondo functionally equivalent to applicant's calculating of a specific gravity as described on pages 6-7, paragraph 23 of the specification. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the color data reduction methods of Yi with the color compression methods based upon maximum RGB component values of Kondo in order to

utilize compressed color data, which saves memory resources, while producing a natural picture with sufficient tones and good quality onto a display (see column 1, lines 8-10 and column 7, lines 50-60 of Kondo). Note, in reference to claims 13, 22 and 34, the office interprets the 24 bit source color data and 16 bit reduced output color data of Yi equivalent to applicant's first and second RGB color values respectively. Further note, in reference to claims 20, 22, 25, 30-32 and 37-39 the office equates applicant's values of M and N to Yi's 24 bit source color data and 16 bit output value stored in memory respectively.

In reference to claim 2, Yi and Kondo disclose all of the claim limitations as applied to claim 1 above. Kondo discloses that when a maximum of R is determined, 8 bit red input data is compressed to 6 bit red data (see columns 5-6, lines 50-3 and Figure 2).

In reference to claim 3, Yi and Kondo disclose all of the claim limitations as applied to claim 1 above. Yi discloses that the bit reducing method may reduce an 8 bit red color component to 5 bits, an 8 bit green color component to 5 bits and an 8 bit blue color component to 4 bits allocating the 2 remaining bits to represent a special attribute (see columns 2-3, lines 63-1). Note, the office interprets that the color of less gravity are normally compressed meaning, a significance of that color is not present therefore not incorporated in coding which Yi discloses when both red and green color component bits are reduced or compressed.

In reference to claims 4, 7 and 10, Yi and Kondo disclose all of the claim limitations as applied to claim 1 above in addition, Kondo further discloses two additional bits being stored to the high order side of the color determined to be a maximum color (see columns 5-6, lines 50-3).

In reference to claims 5, 6, 8, 9, 11 and 12, Yi and Kondo disclose all of the claim limitations as applied to claim 1 above. Although the combination of Yi and Kondo discloses

compressing or reducing color data based upon a specific dominant color or determined maximum color and Yi specifically discloses reducing the 8 bit per RGB color data to a ratio of 5:5:4, 4:5:4 or 4:5:3 for each RGB component (see columns 2-3, lines 63-11), neither Yi nor Kondo explicitly disclose the specific ratios of 6:5:5, 5:6:5 or 5:5:6 derived from bit shifting each color component data by a specified 2 or 3 bits. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement the specific reduced RGB ratios by bit shifting using the specific values of applicant's claims. Applicant has not disclosed that using these explicit values for RGB respectively provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the reduced compression ratios of Yi in combination with the maximum color component determining methods of Kondo because the exact ratios and shifting values are a matter of design choice as preferred by the designer and to which best suits the application at hand. Therefore, it would have been obvious to one of ordinary skill in this art to modify Yi and Kondo to obtain the invention as specified in claims 5, 6, 8, 9, 11 and 12 respectively.

In reference to claim 14, Yi and Kondo disclose all of the claim limitations as applied to claim 13 above. Yi discloses receiving source RGB color data in the form of 24 bit color data and determines a source depth per color component which represents the number of bits per color components, defined as 8 bits per RGB color components by Yi (see column 5, lines 28-36). Yi further discloses that the 8 bits per RGB are representative of a pixel (see column 5, lines 30-32).

In reference to claims 15, 23, 24, 26, 28, 29, 33, 35, 36 and 40, Yi and Kondo disclose all of the claim limitations as applied to claims 13, 21, 27 and 34 above. Yi discloses that the bit reducing method may reduce an 8 bit red color component to 5 bits, an 8 bit green color component to 5 bits and an 8 bit blue color component to 4 bits allocating the 2 remaining bits to represent a special attribute (see columns 2-3, lines 63-1). Note, the office interprets that the color of less gravity are normally compressed meaning, a significance of that color is not present therefore not incorporated in coding which Yi discloses when both red and green color component bits are reduced or compressed. Kondo discloses that when a maximum of R is determined, 8 bit red input data is compressed to 6 bit red data (see columns 5-6, lines 50-3 and Figure 2). Note, the office interprets the first and second number of bits of applicant's claims equivalent to the 6 and 5 bit reduction rates, respectively, of Yi and Kondo.

In reference to claims 16-18, Yi and Kondo disclose all of the claim limitations as applied to claim 13 above, in addition, Kondo further discloses two additional bits being stored to the high order side of the color determined to be a maximum color (see columns 5-6, lines 50-3).

In reference to claim 19, Yi and Kondo disclose all of the claim limitations as applied to claim 13 above. Yi discloses a method and device for processing 24-bit digital video or graphics data by reducing color component bit length and storing the reduced color component bits by concatenating them within a 16 bit memory space (see column 2, lines 51-59). Note, the office equates applicant's values of M and N to Yi's 24 bit source color data and 16 bit output value stored in memory respectively.

References Cited

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a. Masterson (U.S. Patent 5,469,190)
 - Masterson discloses an apparatus for converting color pixels in a 24 bit format to a 15 bit format.
- b. Barkans et al. (U.S. Patent 5,649,083)
 - Barkans et al. discloses a method and system for dithering and quantizing image data reducing color pixel data from a 24 bit representation to 12 or 8 bit representations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

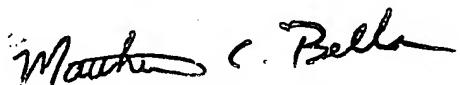
Art Unit: 2676

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

aac

1/28/05